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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

A SCIENCE SERVICE PUBLICATION

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MEDICINE

Streptomycin Still Good

First drug of real value in beating down tuberculosis still "by far the most effective." Best treatment is when given with synthetic chemical, PAS.

► STREPTOMYCIN, the first drug found of real value in treating tuberculosis, is still "by far the most effective" of all drugs developed and tried in recent years, Dr. Henry Welch of the U. S. Food and Drug Administration declared at the meeting of the National Tuberculosis Association in Cincinnati.

This drug from a soil fungus is even more effective when given with the synthetic chemical, para-aminosalicylic acid, known as PAS for short, he emphasized.

Tibione, or TB-1, another synthetic chemical, has a "limited beneficial effect," he said, and other antibiotics, neomycin, aureomycin, mycomycin, terramycin and viomycin, have been studied and shown to have some influence on the disease.

Once streptomycin with PAS treatment is started, it should be kept up for a long time, until definite results are attained, Dr. Nicholas D. D'Esopo of the Veterans Administration Hospital at Sunmount, N. Y., stressed.

When doctors first started using streptomycin to treat tuberculosis, they generally

limited the treatment to four months. Much better results are obtained when the combined streptomycin-PAS treatment is continued far beyond that length of time, Dr. D'Esopo said.

A group of 100 patients at Sunmount has been getting the combined treatment since 1949 for periods ranging from four months to two years. The tuberculosis germs have not become resistant to the drugs and the patients have not shown any harmful effects from this long term treatment.

Dihydrostreptomycin, however, caused appreciable hearing loss when used for more than four months. Use of this drug has now been abandoned at the Sunmount institution.

Combining streptomycin-PAS treatment with collapse and surgical procedures is "the keystone of successful treatment," Dr. Kirby S. Howlett, Jr., of Laurel Heights Sanatorium, Shelton, Conn., said. He warned against prolonging even streptomycin-PAS treatment unduly before proceeding with collapse or surgical measures in certain types of the disease.

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BOTANY

Transfusions Save Plants

► SUGAR SOLUTIONS may serve the same purpose for plants as blood plasma for human beings.

Paul G. Smith of the University of California truck crops division, Davis, Calif., has used sugar sprays to restore energy to tomato plants that were depleted of carbohydrates and has reduced their post-planting mortality by approximately 50%.

Pulling and transplanting cause severe shock, from which weak young plants recover very slowly or not at all. Economically this usually means delayed growth and additional cost for replanting.

The experiments of the University of California scientist were conducted with tomato plants, some of which were shipped to the hot Imperial Valley for transplanting. Tomatoes grown in this area for winter market must attain a good stand by early September while air temperatures are still high and the humidity is low.

Through the sugar treatment, combined with night planting, Mr. Smith secured early and consistent stands.

The sugar solutions have now been tested in field plantings for two seasons. Their

use may make it possible greatly to reduce mortality if plants must be held several days at high temperature or must be planted during hot weather.

Indications are that this method will also be effective on other plants such as peppers and some ornamentals.

Science News Letter, May 26, 1951

PUBLIC HEALTH

Tempting Water May Actually Be Polluted

► THE FIRST hot days of early summer tempt many children homeward bound from school to dive into the nearest stream or swimming hole. Grown-ups, too, on early season drives into the country, may be tempted to a swim or a drink at a wayside stream.

They should remember, however, and warn the children, that typhoid fever and other dangers may lurk in the streams. This is especially true of those in or on the edges of towns and cities which use the streams for industrial wastes and sewage.

You cannot always tell by looking at it whether or not water is polluted. Polluted water can look safe, smell safe and taste delicious and yet be as dangerous as a drink of poison. Just because the water bubbles from a spring or runs in a fairly swift current down the stream does not mean that it is safe, either for drinking or for swimming.

Many health departments, both city and state, regularly inspect and test the water from springs, streams, pools and lakes. If they find the water safe, a sign saying so is usually posted. In some communities, such as Baltimore, signs warning that water is not safe for drinking or swimming are also posted. If the spring, pool or stream has no sign to show the quality of its water, play safe and avoid it. Try to find a supervised, inspected and health department approved pool for the children to swim in.

If you live on a farm or in a small town and have your own well or cistern, you should have it inspected from time to time by the health department. Even if your home water supply has always been safe, there is always the danger of the well walls cracking and allowing polluted water, perhaps from the privy, to seep in. The walls of a cistern should be inspected every time the cistern is cleaned.

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INVENTION

Street Equipment Tells Radio Programs Tuned in Vicinity

► RADIO RECEIVING and measuring equipment, on which the government issued a patent, can tell, when mounted on a truck at a city street corner, which radio programs are being picked up by the various home receivers in the vicinity.

The invention is for use in so-called radio surveys, for the benefit of advertisers, to determine the size of the listening audience to any particular program. Wide usage of this device would eliminate troublesome surveys now being made by telephone calls, and eliminate the recording devices now used on some receivers which must be examined occasionally by inspectors.

Modern radio receivers are today largely of the superheterodyne type. By that it is meant that the frequency of the radio wave received is changed to a new frequency inside the receiver.

In doing this, it is combined with the output of an adjustable local oscillator in the instrument. The result is an output of unmodulated signals which is dependent on the frequency of the station being received. It is the resulting frequencies, picked up by the street instrument, that betray the broadcast station being received.

Patent 2,552,585 was awarded to Henry A. Rahmel, Evanston, Ill., the inventor. Rights have been assigned to A. C. Nielsen Company, Chicago.

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ASTRONOMY

Hear Star's Twinkle Now

Astronomer's device makes it possible actually to hear the noisy twinkling of the stars. Developed as part of quantitative study of scintillation.

*"Twinkle, twinkle little star,
Now I hear you move up thar."*

► ASTRONOMERS around Washington might well be singing this version of the old rhyme. They actually heard the stars twinkle when Dr. John S. Hall of the U. S. Naval Observatory played for members of the American Association of Variable Star Observers a record of the noisy twinkling of stars.

Stars appear to twinkle because the light from them constantly changes in intensity due to irregularities of the atmosphere through which it passes. When this light is converted into electricity by means of a photocell, a low crackling or hissing noise is produced as the electrical current changes in intensity.

"Man has observed the scintillation of stars since ancient times," Dr. Hall told those attending the meeting at Georgetown University.

Aristotle noticed that the fixed stars seemed to scintillate and the planets did not. Aristotle was wrong. The planets do twinkle, but not as conspicuously as do the stars.

Ptolemy noticed that stars near the horizon scintillated more strongly than those overhead. Kepler was evidently the first to spot changes in color due to scintillation, and compared stars to diamonds," Dr. Hall pointed out.

Just before and just after an eclipse, dark bands may be seen fleeting across snow or a white wall much as ripples on quiet shallow water move across a sandy bottom. Dubbed "flying shadows," they are shadows of waves in the earth's atmosphere, made visible by the narrow crescent of light from the sun.

Those ghostly shadows may be two to four inches wide, several times that long, and move rapidly. The dark bands can also be seen within a few seconds of sunrise or sunset, or when the sun is partially hidden by mountains.

With the aid of a telescope, these same shadow bands can be seen by starlight. Stellar images produced by the telescope move about because of the same disturbances in the earth's atmosphere that produce the shadows.

Stars sometimes wander as much as seven seconds of arc. It is these changes of position that make it difficult to observe planets in detail. At the focus of a telescope one part of a planet moves with respect to a

part close to it, and tends to blur the image.

Movies of these shadow bands, believed to be the first ever shown, were exhibited at the meeting. The dark shadows appeared to be traveling across the telescope's lens. The photographs were made by Arthur A. Hoag as part of a quantitative study of scintillation being carried on at the Naval Observatory by Dr. Hall, Mr. Hoag and Alfred H. Mikesell.

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METEOROLOGY

Oil Wells in Gulf Get Improved Storm Warnings

► WORKERS on huge oil wells far out in the Gulf of Mexico now can get adequate warnings of approaching hurricanes, so they can leave for shore in time.

Warnings are prepared through the combined use of weather forecasting, oceanography and applied climatology. The result is that the oil well operators get an

estimate of the amount of time it will take for the huge ocean swells which precede a hurricane to reach their wells.

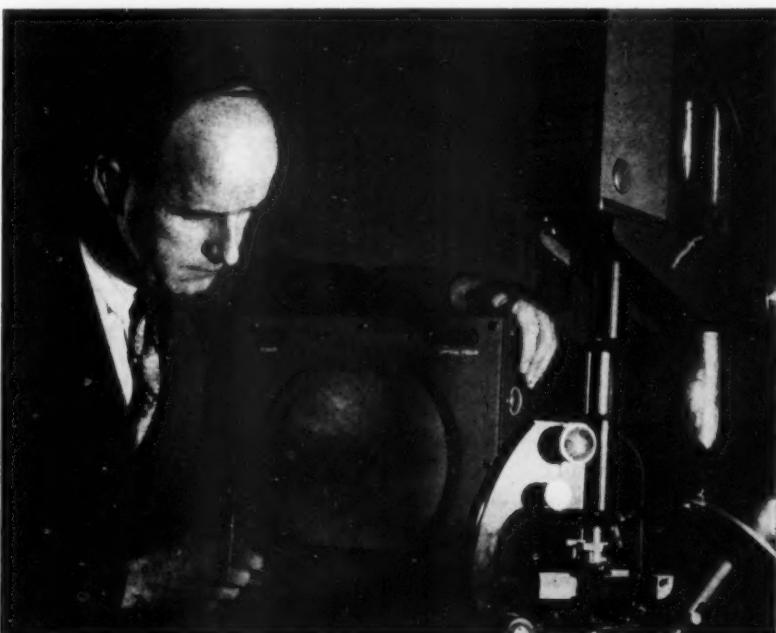
Almost as important as safe evacuation of the men is the need to secure the complex drilling equipment. The job takes 36 to 48 hours.

In one evacuation process, the operators had to remove 6,000 feet of drill pipe from the hole and stack it, in 30-foot lengths, on the oil well platform. This was in addition to the many other tasks involved in insuring the least possible damage to the installation from the approaching hurricane.

The general hurricane forecasts of the U. S. Weather Bureau were not adequate for the purpose, according to Karl Shisler, of an industrial meteorological firm which devised the new method. Mr. Shisler reports it to the American Meteorological Society.

The limiting wave and wind conditions above which it would be impossible to evacuate the workers in small boats were determined. Then specified assumptions as to the rate and direction of movement of both the hurricane and the preceding swells were made. These assumptions were based on Weather Bureau records of hurricanes of the past 44 years. Finally, time lines were plotted on maps of the Gulf of Mexico, the Caribbean and the Atlantic. Thus, once the position and direction of a hurricane was known, it was possible to estimate how long an oil well crew had to evacuate.

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TELEVISION STARS—Wiggling microscopic insects and slides of animal tissue are the star performers on this set, a television microscope designed by RCA Laboratories, being adjusted by Leslie Flory. (See SNL Jan. 20.)

MEDICINE

Salt Injections Ease Pain

"Phantom" sensations of amputees in missing limbs disappear after injection of salt solution into certain areas of patient's back.

► PAINFUL "PHANTOM" sensation of amputees sometimes disappears following the injection of salt solution into certain areas of the back near the spinal column. Dr. Bertram Feinstein of the University of California School of Medicine reported to the Robert Jones Club of orthopedic surgeons meeting in San Francisco.

About 95% of amputees have experienced sensations that seem to come from their missing members, appropriately called "phantom limbs." Usually only part of the missing limb is felt: in order of frequency, fingers and toes, hands and feet, other joints, and lastly the areas of the long bones. The sensation is usually described as a mild tingling similar to that felt in any limb when attention is directed to it. Only when the sensation is painful does it become a serious medical problem.

Of 180 amputee subjects studied by Dr. Feinstein and his associates, 35% said that they had experienced phantom pain. The pain varies from annoying tingling to excruciating cramping and may be a major obstacle to rehabilitation.

Dr. Feinstein cited instances in which the pain of a phantom foot was relieved by injection of an irritant solution (6% salt) into certain of the lumbar vertebral interspaces of the back. The solution itself at first caused pain which radiated from the back down into the phantom leg, increasing the pain in the leg and foot. But when these effects subsided, the amputee was left without pain or, in one case, without even a phantom. Amputees with pain-

ful phantom arms were given similar injections higher in the back. That relief is not always obtained was pointed out. Sometimes the pain merely shifts in position.

A theory proposed by Dr. Feinstein to explain these results is based upon a concept of sensory balance in the normal person. Amputation of a limb reduces the inflow of sensory stimuli to a certain part of the spinal cord and brain, upsetting the balance and increasing the individual's susceptibility to pain. Injection of an irritant solution at that level of the spinal cord in effect restores the balance.

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MEDICINE

Fund for Medical School Support Organized

► A PHILANTHROPIC organization, the National Fund for Medical Education, to provide financial assistance for all the nation's hard-pressed medical schools has been organized.

The undertaking has the sponsorship of industry, the medical profession, organized labor, agriculture, a group of university presidents and 12 scientific and educational foundations.

The American Medical Education Foundation, founded last December by the American Medical Association in Cleveland, will funnel its contributions from doctors through the new organization. These and other grants will be made available immedi-

ately to the nation's medical schools, many of which have large deficits.

Initial support had come from the medical profession and such other groups as 18 leading life insurance companies and many industrial corporations. Starting resources are more than \$1,000,000, toward a \$5,000,000 goal for the first year.

The fund has set up appropriate machinery for distributing the money equitably among the nation's medical schools.

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DENTISTRY

Fluorides Halt Toothaches

Millions of tooth cavities in children now growing up can be prevented if fluoride treatments, simple and inexpensive, are more widely adopted.

► WHETHER THERE will be so many toothaches and decayed teeth in American children now growing up is something that Congress can do something about.

For science has discovered and put into practice a simple, inexpensive method of preventing dental decay to an amazing extent. A minute amount of fluoride chemicals, either added to the drinking water or coated on the teeth by the dentist, is the proved preventive measure that health experts hope can be speeded into nation-wide use.

Already federal funds under the U. S. Public Health Service have made it possible for many states to conduct cooperatively for two years demonstrations of teeth coating with fluorides—topical fluoride treatment it is called. Approximately 450 communities have as a result continued on their own this preventive tooth-saving service for their children.

Cities throughout the nation are joining the rush for better teeth through adding a mere one part per million of a fluoride to city water supplies. Mothers and fathers, dentists, doctors and public health officials are demanding fluoridation. This is the simple and cheap addition to drinking water of the chemicals that controlled tests for over a decade demonstrate will cause a reduction of 65% in the cavities in teeth of the children now growing up.

Before Congress now in the annual appropriations for the U. S. Public Health Service is the opportunity for congressmen to vote against toothaches in the future. About two cents per person in the U. S.—that's about \$3,000,000—will allow this demonstration program to continue and be spread in time to save the teeth of the rising generation.

Almost \$40,000,000 annually must be appropriated by Congress each year to provide dental care for veterans of past wars, while the dental bill of the American people is about a billion dollars annually. In the early months of World War II, one-fifth of the rejections under the draft because of physical defects were due to dental trouble.

Experts are confident that relatively small expenditures per inhabitant of the U. S. now will save many dollars in the next one to two decades for every penny now spent. The dental program now underway that would be stopped if appropriations fail is also insurance against the pain of toothaches and the dental chair in the years to come.

It may seem strange for dentists who make money filling teeth, making false teeth and repairing the damage of tooth

decay to be enthusiastic over a method of preventing dental caries. Because only a third of the American population now receive regular or adequate dental care, the prospect of dentists running out of work is very remote. This alone would justify the approval of the American Dental Association and other medical and health organizations, even though the major motivation in all medical and dental practice is making healthier and better citizens.

Discovery of the beneficial effects of fluorides on teeth was made a little over a decade ago, largely through observation by U. S. Public Health Service experts that teeth of people in areas where naturally there is about one part per million of fluoride in the water have little or no decay. Some areas are naturally protected, although where there is too much fluoride the teeth take on an ugly mottle.

Smallpox has been conquered by vaccination, typhoid fever is almost obsolete due to chlorination of water and immunization, typhus has succumbed to DDT attacks on lice and fleas coupled with immunizations. Now tooth decay can be attacked through use of fluorides.

Millions of those now children will have better teeth if they are allowed to benefit from a continuation of Uncle Sam's nationwide fluoride campaign to provide the "know-how" and demonstrations.

No one would like to go on record as favoring cancer or polio. Similarly, now that a means of preventing tooth decay is known, there will be few who will wish to withhold it from the American people.

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INVENTION

Electrically Heated Smudge Pots To Protect Orchards

► OIL-BURNING smudge pots, long used to protect orchards from late spring frosts and early fall freezes, have a rival in a non-smoking electrical heater invented by Oscar A. Nelson of Covina, Calif. Patent 2,551,039 was his award. It is a device which can be carried about by hand, and it will cost no more to operate, he claims, than the smudge pots it is designed to replace.

The heating element in the device is composed of coils of suitable electrical resistance filaments, and they are placed in vertical position between upper and lower heat-reflecting plates. The device is constructed to be weather-resistant.

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POWERFUL MAGNET — Eraser-sized cobalt-platinum magnet, on right, lifts a steel bar 16 times longer and 24 times heavier than that lifted by Alnico magnet of similar size, as shown here by Miss Dolores O'Hara of General Electric Company.

ENGINEERING

Split-Winding Method Starts Induction Motors

► A SPLIT-WINDING method to give normal-voltage reduced current for starting induction motors was described to the American Institute of Electrical Engineers meeting in Madison, Wis., by three scientists of the General Electric Company, Schenectady, N. Y.

"The scheme," they said, "consists in connecting one phase of a three-phase winding in series during the starting period only, the other phases having circuits in parallel. When full speed is attained, the series connected winding is opened momentarily, and then put back on the line in parallel."

The scientists are P. L. Alger, H. C. Ward, Jr., and F. H. Wright. According to them, the method "gives the advantages of reduced reclosing without any current surge on reclosing, no external impedance, and a low cost of control."

"Although this type of connection will draw unbalanced line currents, this appears unimportant. In most cases there will be other machines on the line to act as phase balancers and absorb the relatively small negative sequence current."

The split-winding method is especially adapted to cases where "soft" starting is desired, without any sudden torque peaks, they added. As compared to the reactor method of starting, the split-winding gives greater torque per ampere and requires less equipment.

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GENERAL SCIENCE

Second National Science Fair

Winners in the Second Annual National Science Fair are named. Thirty finalists hear Dr. Arthur Compton cite need for science skills for defense.

► TWO BOYS and two girls, from Hyattsville, Md., St. Paul, Minn., Belleville, Ill., and Warwick, R. I., were judged first place winners in the Second National Science Fair, held in St. Louis.

They are: Mary Helen Martin, 17, Hyattsville High School senior, first place girl in the biological sciences section; Peter Miller, 18, senior at St. Paul's Central High School, first place boy in biological sciences; Barbara Evelyn Joy, 16, senior at Aldrich High School in Warwick, first place girl in the physical sciences, and Edmund A. Richards, 16, sophomore at Belleville Township High School, first place boy in the physical sciences section.

Finalists in Local Fairs

Each wins \$125 in scientific equipment and books of his own choosing. They earned the right to compete in the National Science Fair by becoming finalists in local fairs. The national event is sponsored by SCIENCE SERVICE's Science Clubs of America with local newspapers and science educators from all over the nation.

Miss Martin was third in last year's national fair. This spring she was one of the 40 Science Talent Search winners. The exhibit which won her first place at St. Louis grew out of an attempt to cross a pimento and a California Wonder pepper. She exhibited her own photomicrographs of cells with different combinations of chromosomes and explanatory diagrams, data charts and procedure techniques. Her trip was sponsored by The Washington Daily News.

Prizes Were "Wished For"

All Fair participants were asked to "make a wish" as to the kind of prizes they wanted if they won. Miss Martin wished for a spotting scope and a telephoto lens.

Mr. Miller has won the American Legion Certificate of School Award and is a member of the Student Council of the Junior Academy of Science. His exhibit on the paleontology of St. Paul consisted of charts containing fossils, diagrams and data, a geologic column, maps and his scientific equipment. He wished for an elementary microscope and a blow pipe as his first prize. He was a finalist in the First Science Congress sponsored by The St. Cloud (Minn.) Daily Times.

Miss Joy is active in the girl scouts, on

the school paper and year book, in sports and the dramatic club. She plans to study dietetics. The exhibit which won her first girl's prize in the physical sciences demonstrated the electrolytic theory of the corrosion of iron and the nature of protection offered by metallic coatings. Her trip to St. Louis was sponsored by The Providence (R. I.) Journal-Bulletin and she wants as her prize a movie camera and projector.

Mr. Richards has won first place three times in the St. Louis Science Fair, sponsored by The St. Louis Star-Times. He has been active in the boy scouts and takes an interest in track and wrestling, the band and dramatics and in church work. He exhibited an infra-red converter tube, patterned after the wartime "snooper-scope" for "seeing" in the dark. He wished for a recording machine, needles and disks.

Second Place Awards

Four second prize winners will receive \$75 worth of scientific equipment and books of their own choosing. They are:

Eva J. Raieta, 17, a senior at the Little Flower Catholic High School for Girls, Philadelphia. Her trip to St. Louis was sponsored by The Philadelphia Inquirer and she will receive a camera and a subscription to SCIENCE NEWS LETTER.

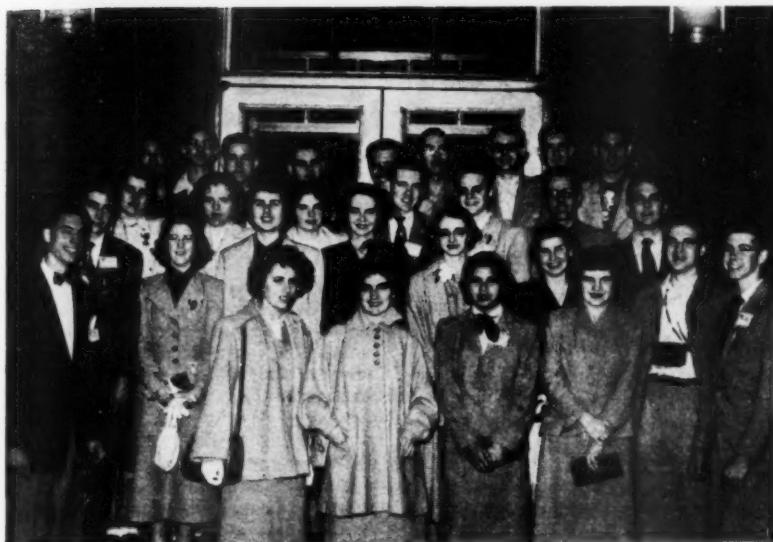
James R. Bosler, 17, a senior at the F. J. Reitz High School, Evansville, Ind. Sponsored by The Evansville Press, he demonstrated the effect of light on plant growth. He wished for a barometer and other scientific equipment.

William A. Scales, 18, is a senior at the Archbold, Ohio, High School. He has participated in science fairs sponsored by the Archbold Buckeye for four years, is president of his school's science club. He exhibited a method of preparing Rochelle salt crystals which produce electric impulses. He wished for electronic equipment for his prize.

LaMar Betz, 18, is a senior at the Quakertown, Pa., High School. His trip to St. Louis was sponsored by the Allentown Call-Chronicle newspapers. He plays baseball and participates in track events. He is a member of the Franklin Scientific Society. He exhibited a cutaway model of a rocket designed to go to the moon. He wanted a camera and case as his prize.



TOP WINNERS—The two boys and two girls who won top Science Fair honors are shown here with Dr. Arthur Compton and Dr. Lawrence Stout. From left to right in the picture are Dr. Compton, Barbara E. Joy, Mary Helen Martin, Peter Miller, Dr. Stout and Edmund A. Richards.



FAIR FINALISTS—Cream of the nation's crop of young scientists, who competed in the Second Annual National Science Fair, photographed just before a guided tour through the Monsanto Research Laboratories.

Third Place Winners

Third place winners, entitled to \$50 in equipment and books each, are:

Alesandra M. Schmidt, 15, Rockville, Conn., High School, who was sponsored by The Hartford Times and whose exhibit was on common molds.

Charles L. Kimbell, 17, McKinley Technical High School, Washington, D. C. He exhibited a fossil animal collection and was sponsored by The Washington Daily News.

Dale H. Learn, 17, Quakertown, Pa., High School, an experimental free-piston gas generator, sponsored by The Oneonta (N. Y.) Star.

Lou Ann Harris, 17, Capitol Hill Senior High School, Oklahoma City, whose exhibit demonstrated the coagulation of blood. Her trip was sponsored by The Oklahoma City Times.

Fourth Place Awards

Fourth place winners of \$12 in equipment and books, and sponsoring papers, are:

Frank W. Rice, 18, Hotchkiss School, Lakeville, Conn., The Hartford Times; Donald P. Shankweiler, 16, Hyattsville, Md., High School, The Washington Daily News; Jean Elizabeth Spencer, 18, Hyattsville, Md., High School, The Washington Daily News; Jim Arden Gilbreath, 17, and Alene Kay Stout, 15, Chanute, Kans., Senior High School, The Chanute Tribune; Robert B. Hotze, 15, Webster Groves, Mo., High School, Joseph L. Kurz, 17, Southwest High School, St. Louis, and Shirley S. Tolentino, 15, University City, Mo., High School, St.

Louis Star-Times; Joan Eileen Smith, 15, Cathedral Academy, Albany, N. Y., The Knickerbocker News; Gloria Mae Hottman, 15, Fargo, N. D., High School, and James R. Hougen, 17, Valley City, N. D., High School, The Grand Forks (N. D.) Herald; Jane Murbach, 18, Archbold, Ohio, High School, The Archbold Buckeye; Rolf Engleman, Jr., 17, Classen High School, Oklahoma City, The Oklahoma City Times; Jacqueline Donna O'Neill, 16, Allentown, Pa., High School, Call-Chronicle Newspapers; William Alwine, Jr., 15, Clayton, N. J., High School, The Philadelphia Inquirer; W. Lewis Brillhart, 17, East Providence, R. I., High School, The Providence Journal-Bulletin; and John Robert Kirk, Jr., 15, and Mary Elizabeth Wray, 16, Martinsville, Va., High School, The Martinsville Bulletin.

Compton Praises Scientists

No one deserves more highly the gratitude of his countrymen than he who devotes the power of his scientific talent to the defense of his nation and to creating a world in which wars will no longer be fought."

Dr. Arthur H. Compton, Nobel laureate in Physics, Washington University in St. Louis, thus characterized, to the finalists of the Second National Science Fair held there, the role that scientists under present world conditions must play. They provide technical strength for protection against those who could destroy our free way of life.

Because of the scientists who apply science to military purposes, Dr. Compton declared, "others are free to build the new world."

"The great problems that science has before it is to make our life what we want it to be," he said. "The horizons of science itself are boundless. In its applications also science has a great future."

The three gifts that we may expect from new advances, as Dr. Compton stated them, are:

"First, we shall have a greatly improved understanding of our world and of ourselves; second, we shall have far greater command of nature's powers in doing the things we want to do; and third, perhaps most important of all, the growth of science and of the scientific spirit requires of men that they find themselves in working for each others welfare."

Scientists today, Dr. Compton said, in building for the future, "must sharpen the spears that we hold in one hand while we ply the trowel with the other."

Scientists Were Judges

Engineers, zoologists, chemists, physicists and geophysicists were included in the list of judges. Four are from industrial laboratories, five from universities. Here they are:

Dr. Edward M. Brooks, associate professor of geophysics at St. Louis University; Dr. Carl K. Dorsey, lecturer in entomology at Washington University; Dr. Florence Moog, assistant professor of zoology at Washington University; William J. Hedley, assistant chief engineer of the Wabash Railroad; Fred F. Rohne, head radar engineer of the Emerson Electric Manufacturing Company, St. Louis; Dr. Lawrence E. Stout, dean of the school of engineering at Washington University; Dr. Alfred H. Weber, professor of physics and head of physics department at St. Louis University; Dr. Ferdinand B. Zienty, associate director of research for the Monsanto Chemical Company, St. Louis, and Kendall Perkins, executive manager of engineering at the McDonnell Air-Craft Company, St. Louis.

Program for Fair

Thousands of visitors viewed the finalists' exhibits set up in the library of the School of Architecture at Washington University where the 30 were campus guests for the three days. The boys and girls held a private showing for 400 scientists one night and on another night were guests of the University at a banquet for invited scientists, including five Nobel Prize Winners.

The finalists made a guided tour of the city as guests of the St. Louis Chamber of Commerce, visiting the research laboratories of Monsanto Chemical Company and the Ralston Purina Company. They enjoyed a behind-the-scenes showing of the St. Louis Zoo as guests of Director Vierheller. The four winners were made known for the first time when they spoke on a nationwide broadcast of "Adventures in Science."

Science News Letter, May 26, 1951

AGRICULTURE

Hordes of Grasshoppers Due To Be Slaughtered

► GRASSHOPPERS ARE due to be slaughtered in great hordes this year. Across the rangeland and plains of the western states, it is open season in the yearly battle to cut down this insect horde at the best time—before the little grasshoppers have grown into big ones.

Forewarned of the danger by the Department of Agriculture, wheat ranchers and cattlemen are loading their spraying tanks with deadly poisons. For the first time this year, aldrin, one of the very new synthetic organic insecticides, will be used extensively in the control contest. Chlordane, toxaphene and, in certain regions, benzene hexachloride, are other chemicals effective against the young grasshoppers.

Areas where grasshopper damage to crop and rangeland will be most heavy have been spotted by the Department's division of grasshopper control in Denver. On their specially prepared map, hard hit regions show up as red, blue, yellow or green spots in 20 of the 48 states.

The map shows that aggressive control effort will be needed from Oklahoma north to the Canadian border, particularly including eastern Colorado, western Kansas, Nebraska, North Dakota, South Dakota, Montana and Wyoming.

Science News Letter, May 26, 1951

MEDICINE

"Bags" Under Eyes Not Necessarily Disease Sign

► MANY PEOPLE are often worried because they have "bags" under the eyes. The condition is often seen in elderly persons. It apparently has not been made the subject of any special study by medical men and does not have any specific name, according to a discussion of it in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (March 17).

The condition is not necessarily due to kidney trouble or heart disease, although it may be seen in such illness and also in cirrhosis of the liver when there is a great retention of fluid. It is not necessarily a sign of debauchery and dissipation, either.

The condition sometimes runs in families, one authority points out. The condition seems to come and go, or the size of the bags varies with the season and the time of day. Allergy may be a cause, and if the bags get worse in fall and winter, food allergy may be suspected. Fatigue at the end of the day or a "rundown constitution" may aggravate the bags, especially in elderly persons.

The tissues of the lower eyelids are normally so loose and full of blood vessels that even slight changes in muscle tone, in the state of the blood vessels, in the elasticity of the skin and other factors re-

lating to the person's general condition may lead to local stagnation of blood in the blood vessels and to swelling of the tissues under the eyes. The wasting of skin and tissues under the skin which comes in old age may play a part in causing bags in the elderly.

If the bags are due to an allergy to food, drugs or cosmetics, staying away from the causative substance should clear up the trouble. No specific remedy is suggested in the medical journal discussion.

Science News Letter, May 26, 1951

GEOLOGY

AEC Test Wells Shed Light On Ground-Water Amounts

► TEST WELLS drilled for the Atomic Energy Commission's Brookhaven National Laboratory have shed new light on ground-water movement in Suffolk County, Long Island. They have also revealed one new species of the tiny one-celled animals known as foraminifera.

The AEC routinely checks condition of ground water at all its installations just to make sure there are no leaks of radioactive materials, though to date they have never found any. As with the Brookhaven tests made public recently, these ground-water surveys are usually made by the Geological Survey.

The tiny one-celled animals leave a limy shell when they die. Over a period of time, these shells form the clays through which one must usually dig to get to artesian water. These shells are believed to have been deposited in the geologic formation known as Gardiners clay about 25,000 years ago.

Science News Letter, May 26, 1951

INVENTION

Improved Paints Contain Soybean Oil, Dry Rapidly

► IMPROVED exterior paints, on which a patent was issued by the government, contain soybean oil as the principal oil ingredient but do not remain tacky as do earlier soybean paints. These new paints have also improved drying qualities, color retention and durability.

The inventors are Arthur J. Lewis, Helen A. Moser and John C. Cowan, all of Peoria, Ill. They received patent 2,550,703. Rights are assigned to the U. S. Government as represented by the Secretary of Agriculture.

The soybean oil used is cleared of extraneous matter. The use of calcium oxide is responsible for the improvements in the paints. The calcium oxide is added as a pigment component in amounts from 4% to 10% by weight of the pigment. This small amount of calcium oxide is not sufficient to cause early paint-coating failure by cracking and checking.

Science News Letter, May 26, 1951

IN SCIENCE

INVENTION

Nose Rest for Face-Down Sleeping and Sunbathing

► NOSE-DOWN SLEEPING is possible with a "face-rest" on which the government has issued a patent. It is a circular frame with a cloth upper surface that will hold the face a little distance above the pillow. The fabric top covering is shaped to fit the face. In its center is a hole for nose and mouth through which the nose projects to get the air that freely circulates between pillow and face.

Inventor Anne C. Costello, of Boston, received patent 2,551,727 for this device. A special use is at the beach when a sun-tan on the back is desired. It is also usable when a back-massage is being given, and again when a person wants to recline face downward to relieve a pain in the stomach.

Science News Letter, May 26, 1951

PSYCHOLOGY

Antihistamines Cause Lazy Feeling But Not Inefficiency

► MANY A person taking an antihistamine drug for hay fever or in the hope of relieving symptoms of a cold has complained it made him feel too sleepy, tired or lazy to work efficiently.

Psychological tests, however, tell a different story. Only one out of a battery of seven tests showed any relation between performance and a tired or sleepy feeling, Drs. Carney Landis and Joseph Zubin of the Psychiatric Institute, Columbia University report.

They gave the tests to 72 normal persons who took an antihistamine, a sugar pill and a sleeping medicine pill on alternate days. The antihistamine was thonzylamine, sold under the trade names of Neohetramine, Anahist and Resistabs. The sleeping medicine was phenobarbital. The pills all looked alike, none of the persons tested knew which was which, and none of the persons giving the test knew which person had had which pill.

On two tests, tapping and determining when a flickering light became steady, efficiency was less when the persons had taken phenobarbital, no matter whether they felt sleepy or peppy.

No statistically significant changes in efficiency were produced between the sugar pills and the antihistamine in any of the seven tests.

Details of the experiments are reported in the JOURNAL OF PSYCHOLOGY (April).

Science News Letter, May 26, 1951

ENCE FIELDS

TECHNOLOGY

Need Research in Coal As Fuel And Raw Material

► RESEARCH IN the field of coal usage is as important as research in mining methods, the American Mining Congress meeting in Cleveland was told by Dean A. A. Potter of the engineering school of Purdue University. The research needed includes coal as fuel and as raw material for chemicals.

"The United States is fortunate in having within its borders approximately half of the world's known supply of bituminous coal, a resource indispensable in meeting the fuel demands of the most highly industrialized nation of the world for steel, power, heat and chemicals," he stated. "An effective and prosperous coal industry is absolutely necessary to our welfare and national security."

Bituminous Coal Research, Inc., of which he is president, expects to have available for commercialization this year efficient coal heating stoves, a magazine warm air furnace, a heating boiler with magazine feeding and a down-jet coal range with close temperature control, he said. It also hopes to have ready for field testing within a year a completely automatic household stoker with bin and mechanical ash disposal.

Research in which much work remains to be completed includes a study of coal as a raw material for chemicals, drugs and fertilizers, and the production of gas. Disposal of fly ash and studies in preventing air pollution are also important.

"In the interests of national security," he added, "we must develop a practical and economic means for converting oil fired residential and industrial equipment to coal."

Science News Letter, May 26, 1951

PHYSICS

Hydrogen Showers Play Part in Auroral Displays

► SHOWERS OF charged hydrogen particles, protons, bombard the earth's outer atmosphere to play some part in auroral displays. The brilliant light of these "northern lights" comes from atoms in the high atmosphere which are highly excited. The cause of an aurora is not known in detail.

Additional evidence that proton bombardment plays a part is put forth by Dr. C. W. Gartlein, physicist at Cornell University. Last fall he aimed two spectrographs, instruments for separating light into the various wavelengths in a rainbow-like

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fashion, at the same auroral display. One instrument was in Ithaca, the other in Arnprior, Ontario, and by telephone he made sure that the two were aimed at the same part of the same arc of the aurora.

From the change in the spacing of the wavelength lines of the spectrograms taken at the two stations, Dr. Gartlein believes that hydrogen particles were smashing into the atmosphere, that their velocities were, at the highest, about 840 miles per second. He concluded that the particles were protons because the earth's magnetic field had a strong influence on the shifting of the spectral lines.

Dr. Gartlein reports his observations in the PHYSICAL REVIEW (Feb. 1).

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INVENTION

Inexpensive Smokeless Stove For Small Homes Patented

► A SMOKELESS stove for small homes which is simple, easy to use, economical on fuel and inexpensive has been granted a government patent. It is a coal-burner employing a down-draft principle to consume the fuel and the smoke that often comes from bituminous coal.

Its fire box contains a coking zone and a coke-burning zone, a combustion chamber in communication with but separate from the zones, and a combustion chamber extending partially inside and partially outside the fire box. This insures the burning of combustible vapors arising from the volatile fuel.

The inventor is Prof. Julian R. Fellows of the University of Illinois, Urbana, Ill., who has spent many years in the development of smokeless stoves and furnaces. He received patent 2,549,778. Rights have been assigned by him to the university.

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MEDICINE

Goiter Remedy Stops Tobacco Virus Growth

► A CHEMICAL that has been used as a remedy in some kinds of goiter can stop the growth of tobacco mosaic virus in tobacco leaves, Drs. Barry Commoner and Frank Mercer of Washington University in St. Louis reported to the American Cancer Society.

The chemical is called thiouracil. A related chemical, uracil, is a basic part of the nucleic acid in the virus. The two are enough alike, apparently, so that thiouracil can jam the chemistry of virus multiplication when it is fed to the virus growing on the plant leaf.

This jamming effect of thiouracil can be counteracted, the St. Louis scientists found, by giving the leaf an added dose of uracil.

Further studies of the chemistry involved and its implications are under way.

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MEDICINE

Patch Up Windpipe With Wire Mesh Reinforced Grafts

► SKIN GRAFTS reinforced with wire mesh can be used successfully to patch the windpipe and bronchial tubes when tuberculosis, injury or cancer requires removal of a section of either bronchial tube or windpipe, Dr. Donald L. Paulson of Dallas, Tex., reported at the meeting of the National Tuberculosis Association in Cincinnati.

This kind of patch "provides a living scaffold" for new lining tissue of windpipe or bronchial tube to grow on. One such patch, or graft, in a bronchial tube survived with little change for a year, Dr. Paulson reported.

The patches have meant the saving of lung function and even of life.

Skin for them is taken from the patient's back. The frame for the patch is made of stainless steel wire or tantalum mesh.

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TECHNOLOGY

Improved Machine Lights To Replace Miners' Lamps

► THE FAMILIAR lamp on the miners' cap will probably long continue to be the principal light at working faces in mines but machine lights and floodlight units are coming into use and promise to become more widely employed when better types are available.

This is the opinion of C. M. Crysler and G. F. Prideaux, of the General Electric plant at Cleveland, expressed at the American Mining Congress meeting in Cleveland. The cap lamp of today is a vast improvement over earlier types, they stated, and new models are superior products.

Other lights used at the face area are machine lights but their designs and placement need considerable further study. The bulbs used must have rugged filaments because they must withstand considerable shock and vibration of mining machines. Permissible portable floodlights would be particularly useful if suspended as close to the working face as possible so that direct light will not have to penetrate dust caused by cutters and loaders.

A problem in lighting the working area in a mine is the dust that quickly collects on cover lenses of machine lights which greatly reduce their output. Elimination of dust is an important factor in improving seeing at the face areas, they stated.

They suggested that mine operators make the surfaces in working areas white. This would improve lighting conditions by reflection back and forth. Dark objects, such as machines, lumps of coal, men and tools, would stand out against a white background. Greater safety would result.

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ASTRONOMY

Venus Now Most Prominent

Its increase in prominence culminates at end of June when brilliant planet will remain the longest in the evening sky. Planet Jupiter also comes in view.

By JAMES STOKLEY

► EVER SINCE it first appeared in the evening sky last January, the planet Venus has been getting more and more prominent. This development culminates on June 25, for then the planet will be farthest east of the sun, and will remain visible for the longest time after sunset—nearly three hours, as seen from Washington. After that it will rapidly approach the sun again and will be out of the evening sky by the end of August. It will reappear in September as a morning star, visible in the east before sunrise.

Not until the end of July will it be at its greatest brightness, about a third more than on June 25, but during June it is so brilliant that it far exceeds other planets and the stars. Even at the beginning of June its magnitude is minus 3.7 on the astronomical scale, about 76 times as bright as a typical star of the first magnitude. Thus, one has no difficulty finding Venus. Indeed, it shines in the southwest during twilight, long before darkness has fallen.

Its position in the constellation of Cancer, the crab, is indicated on the accompanying maps. These give the sky's appearance at about 10:00 p. m., your own kind of standard time (or an hour later for daylight saving time) at the beginning of June, and about 9:00 o'clock at the middle of the month.

Saturn Also Visible

There is, however, another planet which is visible these evenings, though it shines only about a hundredth as brightly as Venus. This is Saturn, in the constellation of Virgo, the virgin. In the same group is the star Spica, of magnitude plus 1.2, just the same as Saturn. Regulus, in Leo, the lion, lower and farther west, is slightly fainter.

The brightest star now visible is Vega, in Lyra, the lyre, over in the east. This has magnitude 0.1, or nearly three times as bright as Spica. Just below it is Cygnus, the swan, in which we find Deneb. Altair, in Aquila, the eagle, is a little to the right.

High in the south, nearly as bright as Vega, we see Arcturus, in Bootes, the bear-driver. Near the southern horizon, just coming into view for its summer appearance, is the constellation of Scorpio, the scorpion, where shines the ruddy star Antares. Actually of the same brightness as Spica, it looks much fainter because of its low altitude, and the resultant greater

absorption of its light by the atmosphere of the earth.

The same effect is responsible for the faintness of two other stars, actually of the first magnitude, which can be seen low in the northwest. These are Pollux, in Gemini, the twins, and Capella, in Auriga, the charioteer. During the winter months they were prominent in the south but now they are about to disappear from view for a while.

Jupiter Appears Late at Night

Later on June nights another planet comes into view, namely Jupiter, which is in the constellation of Pisces, the fishes. Though only about a seventh as bright as Venus, it is many times the brilliance of the other planets and stars. At the beginning of June it rises about 2:00 a. m. and at the end around midnight, standard time.

The other naked eye planets, Mars and Mercury, are now too nearly in line with the sun to be visible.

As the moon moves about the sky, it comes occasionally in front of the sun, as it did on March 7 and will again on Sept. 1, producing an eclipse of the sun. But in the part of the sky through which the moon travels there are many stars, and much more frequently one of these is hidden. Such a phenomenon is called an "occultation." But while occultations of faint stars are common, one of a star of the first magnitude is much more rare. However, such an occultation occurs this month—on the evening of June 10, when the moon passes in front of Regulus, in Leo.

Unfortunately, at this occultation things are not as well arranged as the enthusiasts

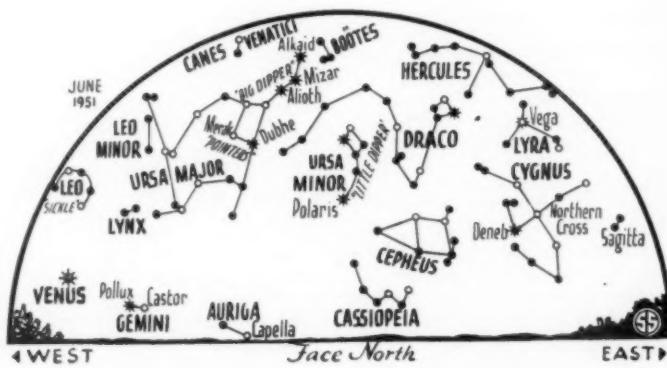
tic amateur astronomer might wish. First of all only the middle and eastern parts of the country will see it at all. Even in the eastern states it will occur mostly during evening twilight, though the ending will occur after it is dark. In the Midwest, it will begin just about as the sun is setting, though the ending will occur with a considerably darker sky. A pair of binoculars, or even of opera glasses, will help show the star close to the moon.

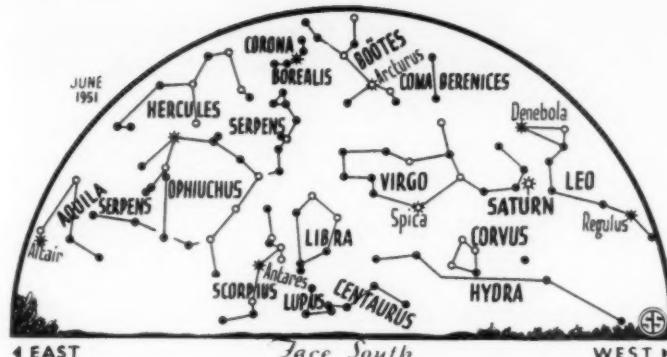
Since the moon travels across the sky in its monthly journey from west to east, it is the eastern edge of the moon that first covers the star. At the time, the moon will be about six days past new, that is, nearly a first quarter. The bright part of the moon will be toward the sun, that is, toward the west, and hence the invisible edge of the dark side of the moon will hide Regulus. It is interesting to watch such an event, as the star seems to be snuffed out instantly. There is no gradual decline in brightness, as would occur if the moon had a layer of atmosphere which gradually absorbed more and more of the star's light. This, therefore, is considered an excellent proof that the moon has no appreciable air layer above its surface.

Naval Observatory Calculations

The times of occultations are calculated in the U. S. Naval Office at the Naval Observatory in Washington for that city and four other locations in the United States, and are published in the annual "American Ephemeris." Incidentally, beginning in 1952, they will also be given for Vancouver, B. C., a fine example of international cooperation.

The occultation on June 10 will be visible from the capital, as well as two of the other points for which data are given. One is in western Massachusetts and the other in southern Illinois. Following are the times for these locations:





• SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

	Star hidden PM	Star uncovered PM
Washington	8:26 EST	9:29 EST
West. Mass.	8:20 EST	9:25 EST
South. Ill.	7:20 CST	8:13 CST

For other parts of the country, it will be interesting to see Regulus very close to the moon on the evening of the tenth. And there is the consolation that there will be another occultation of Regulus on Oct. 25, which they may be able to see, in the early morning hours. This will also be visible from Washington, but there it will end after sunrise, so it will not be as good for residents of that city as the one in June.

Occultations have considerable scientific value. They permit a very accurate check of the movements of the moon which are difficult to predict with great precision. This is because of the "perturbations" produced by the gravitational pull of many other bodies in the solar system. The positions of the stars are known very ac-

curately, so a close timing of an occultation permits us to tell just where the moon was at that moment at least.

Celestial Time Table for June

June	EST	
4	11:40 a. m.	New moon
5	8:00 p. m.	Moon farthest, distance 252,600 miles
8	12:58 p. m.	Moon passes Venus
10	evening	Regulus occulted by moon, visible in middle and eastern parts of U. S.
12	1:52 p. m.	Moon in first quarter
14	morning	Earliest sunrise
19	7:36 a. m.	Full moon
	9:00 a. m.	Moon nearest, distance 221,800 miles
22	12:25 a. m.	Sun farthest north, summer commences in northern hemisphere
25	12:00 noon	Venus farthest east of sun
26	1:21 a. m.	Moon in last quarter
	7:34 p. m.	Moon passes Jupiter
27	evening	Latest sunset

Subtract one hour for CST, two hours for MST, and three for PST.

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ENGINEERING

Better Fuels From Shale

► BETTER GASOLINE from crude shale oil, and more valuable other liquid fuels, are expected from experimental work in purifying crude at the Brucetown, Pa., laboratories of the U. S. Bureau of Mines, the American Institute of Chemical Engineers meeting in Kansas City, Mo., was told.

The crude shale oil as obtained by thermal retorting of oil shale is a high gravity oil, only partially distillable, somewhat asphaltic in nature, high in nitrogen and sulfur content, and meets the specifications of residual fuel only, the engineers were told in a joint paper by three chemical engineers of the Brucetown staff. They are Dr. M. G. Pelipetz, M. L. Wolfson and E. L. Clark.

Crude shale oil from the Bureau's pilot plant at Rifle, Colo., was used in the study. The purpose, they stated, was to investi-

gate the conversion of crude shale oil by high pressure hydrogenation over a solid catalyst to more valuable liquid fuels or to a material more suitable for further processing by petroleum refining methods. The Brucetown laboratory was selected for the work because it has equipment in use in the hydrogenation of coal.

This conversion requires a sufficient reduction in nitrogen content to permit the use of commercial cracking catalysts. A reduction in molecular weight of the crude shale oil is also necessary to decrease the amount of residual fuel oil which would otherwise be produced by further processing. The production of more valuable liquid fuels from crude shale oil requires that the products of hydrogenation contain sufficient quantities of separable materials to

meet the specifications of diesel fuel or gasoline.

The results of the work seem to be successful. The preparation of a suitable raw material, or synthetic crude, for subsequent processing by conventional petroleum refining methods seemed quite feasible, they stated.

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● RADIO

Saturday, June 2, 1951, 3:15-3:30 p.m. EDT
"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Karl Lark-Horovitz, head of the department of physics and director of the Physical Laboratory, Purdue University, Lafayette, Ind., will discuss "New Advances in Electronics."

BORDERLANDS OF SCIENCE

By ALFRED STILL

This unusual work considers critically those "borderland" phenomena — rarely investigated by the scientist — that lie on the wavering and elusive boundary between what the scientist claims as his own rightful territory and the lands where he can not or will not venture.

The author discusses the contributions of science to the distinguishing of reason from belief and reviews the life and work of men like Paracelsus, Cornelius Agripa, Copernicus, Fracastoro, Cardan, Ramus, Galileo, Kepler, Newton and numerous others who helped to end more than a thousand years of bigotry. He then deals penetratingly with those phenomena for which the scientist has failed to provide a reasonable explanation or has been unable to look for one. He explores the phenomena of the divining rod; levitation; poltergeist evidence and telekinesis; body, mind, and memory; the subconscious mind; instinct, intuition, and genius; automatic writing; hypnotism and clairvoyance; psychometry and telepathy.

Provocative, yet profoundly absorbing, this meticulously documented work will fascinate scientist and layman alike.

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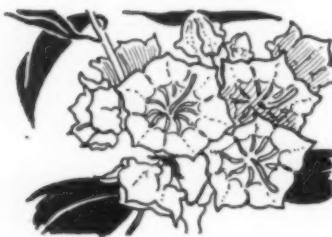
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BOTANY

NATURE RAMBLINGS



Mountain Laurel

► CLOTHING THE slopes of the lower mountains of the East and running down into the lowlands wherever the soil is stony and poor enough to suit its hardy tastes, we find the mountain laurel.

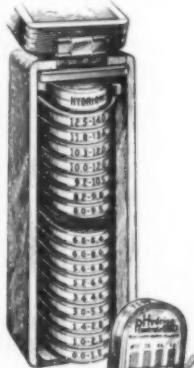
It is one of the most glorious of our shrubs, ranking along with rhododendron and azalea, and indeed is a close cousin of theirs. Like them, it is one of those peculiar plants that thrive well only in acid soils, and one should know the chemical condition of one's yard, or else have it artificially adjusted to suit, before planting laurel.

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R. P. CARGILLE

118 Liberty Street New York 6, N. Y.

The botanical name of the mountain laurel constitutes one of the most enviable of all monuments ever erected by one man in honor of another. When a botanist wants to pay high compliment to a friend, he names a plant after him. Naturally, the more beautiful the flower, the higher the compliment. Peter Kalm, contemporary and co-worker of the great Swedish naturalist Linnaeus, who first organized botany on a modern basis, has received perhaps the most flowery botanical compliment that has ever fallen to the lot of a scholarly collector of plants. For when Linnaeus was called on to give a name to this new handsome shrub from America, he thought of his friend and former pupil Peter Kalm, who had traveled in the New World, and called the beautiful flower *Kalmia*.

Kalmia, or mountain laurel, is a most attractive plant at any time, for its dark shining leaves are evergreen, relieving even the white bareness of the winter woods. But when spring brings its leaves to bloom, the laurel simply outdoes itself. Its clusters of closed star-flowers, pink, but by sheer miracle of vegetative good taste not too pink, are things for poets to write sonnets about.

Most of our fine flowers are in greatest danger from vandalistic gatherers when they are in bloom, which is what one might expect. But the mountain laurel is less troubled than than it is in late autumn and early winter. Its evergreen leaves have found altogether too good a market in eastern cities, and the more accessible areas where it grows are rapidly being depleted by the market-hunters. Fortunately for future generations of American flower-lovers, mountain laurel is true to its name, and the higher slopes of the Appalachians still give it refuge, keeping green the memory of Linnaeus' friend, Peter Kalm.

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TECHNOLOGY

Hydrazine Fluxes Basic In New Soldering Method

► A LONG-KNOWN but, until recently, little-used chemical called hydrazine is responsible for a new soldering method which will give automobile radiators superior strength and less corrosion.

The superiority of the new soldering methods comes from the use of hydrazine compounds as soldering fluxes to promote fusing and prevent oxidation. A new series of soldering fluxes, bearing the trade name M.C.C., was discovered by McCord Corporation of Detroit, Mich., and developed cooperatively with Mathieson Chemical Corporation of Baltimore.

Called the "Coronil Soldering Process," the hydrazine fluxes used are suitable in joining most of the commonly used metals and produce solder bonds of highest strength, leave no corrosive residues and eliminate corrosion of plant equipment, Mathieson scientists state.

Hydrazine was made about 60 years ago by German chemists. It has interested research people ever since, and many hydrazine compounds have been developed. Only recently, however, has the parent material been manufactured.

In a method now employed by the Mathieson Corporation, hydrazine is made from ammonia and sodium hypochlorite. The process includes a low-temperature mixing in the presence of an accelerating agent called a catalyst. Another company is making hydrazine by reacting sodium hypochlorite with urea.

Many uses for hydrazine compounds have been developed in the past few years. Maleic hydrazide will stop the growth of plants for a limited time.

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MEDICINE

Operation for TB Patients

► HOPE FOR many tuberculosis patients who formerly would have been thought incurable is available through an operation for removal of the lung or parts of the lung. Drs. John S. Harter and Arthur J. Beland of Louisville, Ky., reported at the meeting of the National Tuberculosis Association in Cincinnati.

Of 75 patients given this operation at Nichols Veterans Hospital since October 1946, there were only three deaths.

The operation conserves the function of the lung better than either thoracoplasty, in which the lung is permanently collapsed by removal of sections of ribs, or pneumothorax in which the lung is temporarily collapsed, the Louisville doctors believe.

If the disease is localized to one lung or one lobe of a lung, long periods of sanatorium care are no longer necessary for

patients having the operation, Dr. Harter said. Patients at the Veterans Hospital were all given six months of bed rest following the operation, but in private practice, most patients could take this rest after the operation at home.

The true value of the operation will not be known, the Louisville doctors stated, until five years after, but they predict that many patients will show a better cure rate at the end of five years with this operation than when treated by other methods.

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The bulk of the American strawberry crop is harvested in April, May and June, but strawberry-picking goes on in one part of the country or another every month of the year.

PSYCHOLOGY

War Worries Children, Too

Young children unhappy about war, but themes show they also realize that killing and death are normal in peace as well as in war.

► WAR WORRIES children, even as young as third graders, and makes them unhappy just as it does grown-ups. But even young children realize that killing and death are always with us, in peace as well as in war.

These are the conclusions of a study by Dr. Arthur L. Rautman of the University of New Mexico Counseling and Testing Service in Albuquerque and Miss Edna Brower of the Board of Education at Sioux City, Iowa.

During World War II, in December, 1943, these two psychologists tested children's reactions to the war by a picture test. In this test each child was shown 10 pictures and asked to write the story of the picture. They were to tell what was happening in the picture, how the people were feeling and how it would end.

Some of the pictures showed a gun. In one, for example, a revolver was on the floor beside a boy huddling against a couch

with his head bowed on his right arm. Another picture showed a little girl climbing a winding flight of stairs. One showed a gaunt man with clenched hands standing among gravestones.

In 1943 war themes were in two or more of the stories told by 83 out of 536 children tested. In 1950, only eight out of 468 grade school pupils had war themes in more than one story.

The percentages of pictures interpreted in terms of death and killing by accident or other non-war means was almost identical in 1943 and 1950.

But in 1950 half the stories, 50.64%, were given a happy ending, compared to about a third, or 35.19%, given happy endings in 1943. The 1950 tests were made before the war in Korea started. Details of the study are reported in the *JOURNAL OF PSYCHOLOGY* (April).

Science News Letter, May 26, 1951

METALLURGY

Rhenium Has Bright Future

► A LITTLE known metal called rhenium may some day play an important part in high-temperature alloys and in the field of electronics, according to Prof. A. D. Melaven of the University of Tennessee in Knoxville. First and chief production of this metal in America is in the chemical laboratories of this institution.

Rhenium is a heavy, silver-white metal that has a melting point of 3,100 degrees Centigrade, about the same as tungsten. It is this high melting point that gives it value in high temperature alloys. It has a longer life than tungsten when operated at any given temperature, Prof. Melaven states.

The metal, if available in sufficient quantities, would be extremely valuable to manufacturers of high vacuum electronic equipment because it has a higher electron emission than tungsten. There are other possible applications. Only one source of the metal has yet been found. It is in a flue dust obtained in the processing of molybdenum sulfide, a by-product of Arizona copper sulfide.

Discovered in 1925 by German scientists, rhenium was produced commercially about 1930 from a Norwegian ore up until World War II. No production since then has been made, as far as known. In a process of obtaining it here from molybdenum roaster

flue dust, supplied by the Miami Copper Company, Miami, Ariz., the material is agitated in water. Molybdenum sulfide is filtered off and the filtrate treated with potassium chloride to precipitate potassium perhenate, which is reduced by hydrogen to the metal.

The metal produced by the Tennessee University process is a dark gray to black powder selling at approximately \$900 a pound. Samples have already been sold to over 100 research laboratories. A much lower price is expected when larger reserves of the metal are found and better reduction methods developed.

Science News Letter, May 26, 1951

PHYSICS

Electronic Brains Can Mass Produce Clerical Work

► A SECOND industrial revolution is promised for the future by the development of electronic computers, Dr. S. N. Alexander of the National Bureau of Standards has stated.

Mass production techniques will be applied to the world's paper work, just as mass production techniques are now used to manufacture material things, he predicted at a meeting of the Industrial Research Institute in Washington, D. C. These

"fact factories of the future" will result from concerted effort to build such machines. Much of the know-how has already been acquired.

Although in scientific circles, mechanical brains are known as electronic digital computers, they can actually do much more than compute. The main thing they do, he said, is process information automatically and with tremendous rapidity.

Science News Letter, May 26, 1951

GENERAL SCIENCE

Navy Scuttles Cook Book For Card Index File

► THE OLD Navy Cook Book is being scuttled. Its place is being taken by 600 3 x 5 cards. Furthermore, the cards are as up-to-date as they can be—made of a plastic material, they are waterproof and washable.

The 600 recipes are the result of a two-year research program carried out by the Navy. Many of the old recipes in the Cook Book have been transferred to the 3 x 5 cards after testing. However, new recipes have also been added.

Science News Letter, May 26, 1951

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TECHNOLOGY

New British Process For Superphosphate Fertilizers

► A SHORTAGE of sulfuric acid in England for treating phosphate rock to make essential superphosphate fertilizers has resulted in the development of a new process in which a mixture of nitric acid and sulfuric acid is used to obtain satisfactory results.

The process was developed by the British Department of Scientific and Industrial Research. Experimental work showed that nitric acid alone can be used to reduce the phosphate rock giving calcium phosphate, and calcium nitrate as a by-product instead of calcium sulfate when sulfuric acid alone is used.

Calcium nitrate is a valuable fertilizer, but it absorbs moisture readily, causing caking. After storage and caking it is of little value to the farmer. In the new process, nitric acid and sulfuric acid are used in the proportion of four to three. Both calcium sulfate and calcium nitrate are formed. The sulfate picks up no moisture from the atmosphere and, in the by-product obtained, the calcium sulfate forms a coating over the grains of calcium nitrate which protects the latter from the damp atmosphere.

England depends largely upon the United States for the sulfur needed in the manufacture of sulfuric acid. There is now a world shortage of sulfur, and England's imports from America have been cut by one-third. Nitric acid can be made in the United Kingdom without relying on any imports. The new process will not only produce the superphosphates needed in British agriculture but it will make more sulfuric acid available for the many industrial processes in which it plays an important part.

Science News Letter, May 26, 1951

Shoes a century ago were not made in "rights" and "lefts" and were worn on either foot; the first manufacture of right and left shoes on a wide scale was for soldiers in the Civil War.

DO ANIMALS THINK?

Do animals feel the same emotions we do? Which animals are most intelligent? How does the rhinoceros compare with the elephant in memory, learning power and reasoning ability? How do dogs, cats, birds, monkeys, fish, foxes, chimpanzees and chickens rate on their IQ's? The results of hundreds of psychological tests summarized in Vance Packard's informative, entertaining book "ANIMAL IQ: THE HUMAN SIDE OF ANIMALS," 46 superb animal and bird photos, 192 pages, American, first edition, limited 12 copies give out. Send check or M.O. to DOVER PUBLICATIONS, Inc., Dept. 1, 1780 Broadway, New York 19, N. Y. Return book in 10 days for full refund if not delighted.



Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWSLETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

ALUMINUM: The Industry and the Four North American Producers—*The First Boston Corporation*, 79 p., illus., paper, free upon request to the publisher, 100 Broadway, New York 5. Tracing the industry's progress accomplished within a single lifetime, its processes, products, outlook and statistics.

THE AMERICANA ANNUAL 1951: An Encyclopedia of the events of 1950—Lavinia P. Dudley and John J. Smith—*Americana Corporation*, 784 p., illus., \$10.00. Contains 760 alphabetically arranged articles on current events with index and illustrated chronology.

COMMUNIST ZOO—Hans Muller—*Swen*, 50 p., illus., paper, \$1.00. Reception of the book in the Chinese edition prompted the present edition. You will be amused at the resemblance to the Soviets seen by the author in these animal portraits.

THE DAKOTA BARK HOUSE: Indian Leaflets 1-4—*Science Museum, St. Paul, Minn.*, 16 p., illus., paper, 50 cents. Four leaflets based on research studies now being made of the Indian collections in the Science Museum, in a folder containing a selected bibliography.

EFFECT OF SOIL AND COVER CONDITIONS ON SOIL-WATER RELATIONSHIPS—George R. Trimble, Jr., Charles E. Hale and H. Spencer Potter—*Northeastern Forest Experiment Station*, 44 p., illus., paper, free upon request to publisher, Upper Darby, Pa. Information necessary for flood-control projects.

EFFICIENCY OF FLOORING NAILS—E. George Stern—*Virginia Polytechnic Institute*, 7 p., illus., paper, 20 cents. Heat-treated, threaded nails have been found by test to be more efficient and economical for both hardwood and softwood.

HANDBOOK OF EXPERIMENTAL PSYCHOLOGY—S. S. Stevens, Ed—*Wiley*, 1436 p., illus., \$15.00. Results of recent research in manageable form for the use of the advanced scholar or graduate student. Thirty-four authors contributed to the volume.

HISTORY OF PHARMACY: A Guide and a Survey—Edward Kremers and George Urdang—*Lippincott*, 2d ed., 622 p., illus., \$7.50. Revised and brought up to date after ten years. Especially helpful will be the bibliography, chronology and alphabetically arranged appendix of names and facts.

HONEY IN THE COMB—Carl E. Killion—*Killion & Sons*, 114 p., illus., \$3.00. Practical and well-illustrated instructions for the person who keeps bees to produce comb honey.

AN INTERNATIONAL BIBLIOGRAPHY ON ATOMIC ENERGY: Volume 2, Scientific Aspects—Atomic Energy Commission Group, UN—*United Nations (Columbia University Press)*, Unnumbered pages, paper, \$10.00. Contains 24,282 entries with author index.

JOHANNES KEPLER: Life and Letters—Carola Baumgardt—*Philosophical Library*, 209 p., illus., \$3.75. Biography of the father of modern astronomy together with letters which reveal his personality. Introduction by Albert Einstein.

METHODS AND ACTIVITIES IN ELEMENTARY SCHOOL SCIENCE—Glenn O. Blough and Albert J. Huggett—*Dryden*, 310 p., illus., \$3.75. To help the student teacher learn how to make scientific facts clear to young children.

NUTRITION AND ALCOHOLISM—Roger J. Williams—*University of Oklahoma Press*, 82 p., \$2.00. Discussing the causes of alcoholism and describing a treatment by nutritional supplements by which alcoholics can be made into moderate drinkers.

ORGANIZATION AND PATHOLOGY OF THOUGHT: Selected Sources—Translation and Commentary by David Rapaport—*Columbia University Press*, 786 p., \$10.00. Papers which seem to the editor to explain part of the enigma of how thinking takes place.

PROCEEDINGS OF THE ALASKAN SCIENCE CONFERENCE—*National Research Council*, 216 p., paper, \$2.00. Experts of many fields were brought together to discuss the problems of this northern territory.

RICE, DIETARY CONTROLS AND BLOOD PRESSURE WITH MENUS AND RECIPES—Frances J. Seymour—*Froben*, 206 p., \$2.95. A patient who has suffered from hypertension and is also a physician provides advice and menus for those whose doctors have prescribed the rice treatment.

TOMORROW'S HORIZON IN PUBLIC HEALTH—*Public Health Association of New York City*, 109 p., paper, \$1.00. Transactions of the 1950 conference of the Association. Of interest to those concerned with keeping the community healthy.

Science News Letter, May 26, 1951

MEDICINE

Harder TB Fight Urged As Defense Measure

► TUBERCULOSIS MUST be fought harder than ever now as a national defense measure, Dr. Robert J. Anderson of the U. S. Public Health Service declared at the meeting of the National Tuberculosis Association in Cincinnati.

Tuberculosis robbed western Europe of much of its capacity to resist the military invader during the last war, he pointed out. That was because medical resources for treating tuberculosis had to be turned to more urgent needs. As a result, the disease spread widely and further weakened the population.

To avoid such a situation here, Dr. Anderson said every effort must be made now, "while we yet have time," to find cases of the disease and bring them under treatment so they cannot spread the disease to others. The campaign against the disease must be intensified to the point where hidden cases of tuberculosis will not seed new infections among us," he declared.

Science News Letter, May 26, 1951

GENERAL SCIENCE

Office Discussions Help

► OFFICE DISCUSSION about last night's date and tomorrow's baseball game may actually help get more work done. And singing on the assembly line probably has some bearing on the rate of production.

Instances where things like this actually happened were the take-off point for discussion of work and human values in industrial civilization. It was part of a conference on living in industrial civilization held in Corning, N. Y., under the auspices of the American Council of Learned Societies and the Corning Glass Works to commemorate the 100th anniversary of the glass factory.

The discussion, led by Dr. Douglas MacGregor, president of Antioch College, and participated in by leaders in industry, labor and education, then considered what the meaning of work in an industrial civilization was to the worker.

Dr. E. Wight Bakke, director of the labor and management center at Yale was quoted on what work meant: "To play a

socially respected and admired role; to win a degree of economic security customary among one's associates, to gain an increasing amount of control over one's own affairs, and in all of these to experience satisfying and predictable relations with the members of the groups with which one is most intimately associated—these are the goals which our informants were most vigorously striving to reach."

Complexities of modern industrial life which stood in the way of reaching these goals were discussed. It was pointed out that the plant is a complicated social system and that the pattern of human relationships within the plant affects the life of the community. People spend more time on their jobs than anywhere else except in bed, it was said.

Broad research programs, delving into the workers' relationships with their jobs and how those relationships affect their families, their homes and their communities, were suggested.

Science News Letter, May 26, 1951

MEDICINE

Spring Time For Ticks

► AS THE weather warms up, more of you will be cleaning up gardens, picnicking, hiking and otherwise getting into the woods and underbrush. At the same time the dangerous, blood-sucking ticks will be coming out of their winter quarters. Be on guard against these bugs, since Rocky Mountain spotted fever and tick paralysis are diseases that may result from tick bite.

Rocky Mountain spotted fever is no longer quite the worry that it was a few years ago. Two of the new antibiotic drugs, chloramphenicol and aureomycin, are reported to give good results in treating this disease, and so is one of the B vitamins, para-aminobenzoic acid, or PABA for short. And there is a vaccine against the disease. Originally, this was made by U. S. Public Health Service scientists, some of whom lost their lives working with the deadly rickettsia germs that cause the disease. Then a new, less dangerous method of making the vaccine was developed and it became possible to produce it commercially. If you live in a tick-infested region, your doctor may have recommended the vaccine for you and the children, but the chances are he is not likely to do so now that there are good remedies available for treating you if you get the disease.

He is likely, however, to advise you to continue to be on guard against ticks. It is no fun to be sick, and even the best of remedies sometimes fail.

Rocky Mountain spotted fever, in spite of its name, is not limited to the Rocky Mountain area where it was first discovered. Cases have been seen in 47 of the 48 states and in recent years most cases have been in the central and eastern states.

If there are ticks in your vicinity, health and medical authorities advise night and morning tick inspections as part of the daily routine for the children and the family dog. Include any grown-ups who have been working in the shrubbery or underbrush or picnicking in the woods. Every part of the body and clothing should be carefully inspected for ticks. If any are seen, use a tweezers or piece of paper to remove them. Never use bare fingers as you can get the disease from handling crushed infected ticks.

Science News Letter, May 26, 1951

ASTRONOMY

Giant Sun Spot Is Biggest in Four Years

See Front Cover

► A GIANT sun spot group, the biggest to mark the sun in four years, was visible on the sun's surface for more than twelve days recently.

The freak spot was expected to cause serious disturbance of short wave radio

communications, but the storm never materialized at the predicted time.

Shown on the cover of this week's SCIENCE NEWS LETTER, in a photograph taken by Mrs. L. T. Day of the U. S. Naval Observatory, the region could easily be spotted by looking at the sun through smoked glasses or several thicknesses of film negatives for eye protection.

Although the huge sun spot area looks dark, it is really not dark at all—it is merely darker than the surrounding area.

Dr. William Markowitz of the Naval Observatory estimated that the spot area stretched out over 150,000 miles. As astronomers measure the size of sun spot regions, this one was at least 4,200-millionths. That is, if the sun's visible disk is divided into millionths, this disturbance covers 4200 of these divisions.

The largest sun spot ever recorded covered an area of 5,400-millionths. This spot region passed the central meridian of the sun on Feb. 5, 1946.

The activity was unexpected because the 11-year sunspot cycle is approaching a minimum.

Science News Letter, May 26, 1951

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PLASTIC BOTTLES, for carrying cold drinks on a ride or to a picnic, are filled with the beverage in the home and frozen in the refrigerator. The freezing will not break the plastic bottle, and the contents remain cold for a long period after removal from the refrigerator.

Science News Letter, May 26, 1951

CEILING PAINTER, to apply pigment by means of a roller, is a recently patented device consisting of an elongated trough to hold the paint and a roller attachment which rotates in the paint and against the ceiling. Wipers near the upper edges of the tank remove surplus paint.

Science News Letter, May 26, 1951

PUSH-BUTTON gas range for the kitchen does away with the use of matches or gas pilot lights. An electric glow-coil does the igniting. When the button is pressed for a few seconds, the coil is heated. Then the gas is turned on and becomes immediately lighted.

Science News Letter, May 26, 1951

TELEVISION is available to polio patients in iron lungs by means of a mirror attached to the lung and a television receiving set in which the coil controlling the horizontal reception is reversed, giving reversed images. The use of a mirror corrects these reversed images.

Science News Letter, May 26, 1951

BATTLE SUIT for the Navy is an overall made of rubberized material as illustrated by the accompanying photograph. Its buoyant vest can keep a man afloat in the water. The lightweight vest

Do You Know?

There are oases in the Arabian desert so malarious that the wandering Bedouins visit them only long enough to gather the date harvest.

There is an idea among many sportsmen that fish will not bite during a thunderstorm but others claim they have proved the idea false.

Much seed now planted by farmers is treated before being put in the soil with chemicals to destroy diseases that may be borne by the seed or the soil.

A wartime decree in Japan minimized the amount of bran and germ to be removed from rice in polishing, resulting in lowering the mortality rate from beriberi.



and a watertight face seal of the same material are a plastic containing millions of non-connecting cells of air.

Science News Letter, May 26, 1951

BALANCE ROD for the stepladder is a yard-long stick of wood designed to clamp to the upper step of the ladder projecting vertically upward. The sturdy clamp is made of an aluminum alloy; the rod is grasped by one hand when the user is high on the ladder.

Science News Letter, May 26, 1951

FLASHLIGHT-LENS combination has a magnifying lens at right angles to the ordinary lens of the flashlight which enlarges objects viewed below it by seven times. Housing for the lens directs the rays from the flashlight to the viewing field without direct rays to the eyes of the user.

Science News Letter, May 26, 1951

TWO-COMPARTMENT BATHTUB, recently patented, is an elongated affair with a main bathing section and a secondary compartment for washing hair, clothes and the baby. The dividing partition has a depression to hold the head with the body in one compartment and the hair in the other.

Science News Letter, May 26, 1951

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